AMEREN-CIPS

1999

GENERAL ASSESSMENT OF ELECTRIC SERVICE

MAY 2000

I. Introduction

Ameren-CIPS presents this 1999 General Assessment of Electric Reliability to the Illinois Commerce Commission in accordance with Section 411.160 of the 83 Illinois Administrative Code 411.

Ameren-CIPS completed its AM/FM conversion project that enables interruption reporting at the customer specific level beginning in 1999. Also, modifications were made to the outage tracking system that allows the tracking of controllable interruptions for 1999.

II. Customer Satisfaction Survey

Generally speaking, our customers considered Ameren-CIPS to be a good provider of reliable electric service at a cost comparable to other electric service providers as evidenced by our annual customer survey. The results of this survey are detailed in Attachment A.
[411.120 b) 3) G) v)]

III. Distribution and Transmission Facilities Financial Information

A. Nearly all Distribution and Transmission expenditures have an impact towards maintaining or improving reliability. Ameren-CIPS plans to make the following expenditures for this year and the following 3 years, 2000-2003.

	1999	2000	2001	2002	2003
Distribution	$64,081,600 (actual)	$58,355,200	$62,296,400	$60,734,300	$67,017,000
Transmission	$11,699,000 (actual)	$14,049,400	$14,536,100	$17,017,100	$22,620,200
Expenditures are in constant 1998 dollars (assuming a 3% inflation rate)					

[411.120 b) 3) A)]

These values are also included on Attachment B where these values are compared to our Distribution and Transmission Plant investment and average remaining depreciation lives.
[411.120 b) 3) G) iii) & iv)]

The expenditures for 1999 for Distribution and Transmission were within 1.5% of the plan that was filed with last year's General Assessment Report. [411.120 b) 3) B)]

Included as Attachment C are the relevant characteristics of each operating area and a qualitative assessment of the equipment and facilities in each operating area.

Ameren-CIPS only maintains facility age records for the company as a whole, not on an operating area basis.

[411.120 b) 3) G) i)]

B. There are numerous operating practices performed at Ameren-CIPS which are performed on a periodic basis that do have direct bearing upon reliability. Nearly all of these activities are performed to allow Ameren-CIPS to identify problems and potentially prevent customer interruptions from occurring. These practices will not be identified as specific reliability projects. Some of the more important ones are noted below:

1. Periodic Substation Inspections
2. Infra-red Scanning Substations on Periodic Basis
3. Substation and Relay Equipment Maintenance and Testing on Periodic Basis
4. Line Inspections on a Periodic Basis
5. Installation of Anti-Galloping Conductors in Susceptible Areas
6. Installation of Animal Protective Guards in Susceptible Areas
7. Periodic Review of System Reliability and System Loadings

C. Specific Reliability Projects `[411.120 b) 3) A) iii) iv) viii)]`

Ameren-CIPS does consider the effects on customers and the cost of reducing the number of planned and unplanned interruptions in our reliability projects.

1. Aerial Sub-transmission Infrared Inspection - The present plan is to perform an aerial inspection of the sub-transmission system on a 3-year cycle. This project enables Ameren-CIPS to identify and fix problems (loose connections, weak splices, air break switches, etc.) before any interruptions might actually occur.

2. Worst Performing Feeders - From outage information, the worst performing feeders are identified annually. The worst performing feeders list is developed based on the previous year's historical performance and can not be specifically projected into the future. There is a formalized reporting process to ensure that proper steps are taken in the problem analysis and remediation identification processes. The evaluation criteria for determining these are not strictly determined from CAIFI, SAIDI, or CAIDI.

3. Lightning Protection - Identification of where lightning protection enhancement projects can provide major benefits will continue. The lightning protection projects list is developed based on the previous 4-year's historical performance and recommendations by the regions.

4. Pole Inspection and Treatment - Data collected in the first phase of the sub-transmission and distribution backbone inspection will be analyzed to evaluate such things as percent of poles that failed test, percent reinforcement, etc. By performing this inspection, we will be able to identify and replace or repair poles that might otherwise fail and result in unplanned customer interruptions. This is an on-going reliability project.

5. Annual Tree Trimming – Trimming distribution and transmission circuits will continue on a periodic cycle. The crews use "natural" tree trimming methods that are intended to direct future tree growth away from power lines.

D. Unresolved Reliability Complaints

Ameren-CIPS has no unresolved reliability complaints from other entities.

[411.120 b) 3) A) vi)]

IV. Interruption Information

With the completion of the AM/FM conversion project, Ameren-CIPS is able to more accurately track all customer interruptions with the Ameren Outage Analysis System (OAS) which was not previously feasible. This is the major reason for an approximately 900% increase in the number of interruptions. For the 1999 customer interruptions, 75% were transformer or single customer interruptions that we could not track previously. This increased accuracy from the OAS reporting system is the main reason for the approximately 300% increase in company SAIFI but only a minimal 20% increase in company CAIDI.

In 1999, Ameren-CIPS experienced 1 major storm in the Shawnee and Wabash regions which was reportable to the ICC Commission under Section 411.120 a) on May 15, 1999.

A. Number and Duration of Planned and Unplanned Interruptions

Below is the data associated with Ameren-CIPS planned and unplanned interruptions in 1999.

The impact on customers of planned and unplanned interruptions are inconveniences to the customer since they have no electricity during the interruption.

	# of Interruptions	Duration
Planned Interruptions	646	843 hours
Unplanned Interruptions	10264	31,790 hours

[411.120 b) 3) C)]

B. Number and Causes of Controllable Interruptions

Below is the data associated with Ameren-CIPS controllable interruptions in 1999.

CAUSES	# of Interruptions	% Total Interruptions
Other Alternative Retail Electric Supplier or Other Utility	0	0%
Jurisdictional Entity / Contractor Personnel Errors	60	8.2 %
Customer	0	
Public	2	.3 %
Weather Related	11	1.5 %
Animal Related	1	.1 %
Tree Related	275	37.4 %
Overhead Equipment Related	2	.3 %
Underground Equipment Related	0	0 %
Intentional	378	51.4 %
Transmission & Substation Equipment Related	6	.8 %
Unknown	0	0 %
Other	1	.1 %

[411.120 b) 3) D)]

C. Number of Interruptions Due to Other Electric Supplier

Ameren-CIPS had no customer service interruptions due to another electric supplier in 1999.

[411.120 b) 3) E)]

D. Comparison of Interruption Frequency and Duration for Customers with Alternative Electric Supplier

On December 31, 1999, Ameren-CIPS had no customers with Alternative Electric Suppliers.

[411.120 b) 3) F)]

E. Overview of Customers' Reliability Complaints

Ameren-CIPS had 2 formal reliability complaints from customers for 1999.

DATE	CASE # and LOCATION	COMPLAINT	RESOLUTION
5/25/99	1999-12895C 13373 Pittsburgh Rd Marion	Customer complained about frequent outages.	Experienced 2 interruptions in 1999, 5/17 caused by severe storm and 5/24 caused by logging company. Had also experienced 2 interruptions in 1998 due to storm. Informed customer and ICC.
11/19/99	1999-33845S 302 Orange St Anna	Customer complained about unacceptable service restoration efforts.	Customer reported interruption at 1744 on 11/17 and power not restored until 2115. Company followed correct procedures in getting employee for overtime callout to an outage that was not threatening public safety. Informed customer and ICC.

[411.120 b) 3) E)]

V. Service Reliability Information – Company Wide

A. Ameren-CIPS experienced the following SAIFI and CAIDI reliability indices for 1999:

REGION-1999	SAIFI	CAIDI	CAIFI
EAGLE VIEW	1.47	107.66	2.17
HERITAGE	1.45	98.18	2.72
NORTHERN PRAIRIE	1.72	92.08	2.07
SHAWNEE	1.93	187.93	2.54
WABASH	1.63	161.30	2.35
FOUR RIVERS	2.01	173.56	2.45
COMPANY	1.72	146.92	2.39

[411.120 b) 3) H)]

B. Below is a summary of the interruptions by Cause Category experienced by Ameren-CIPS for 1999:

CAUSES	# OF INTER-RUPTIONS (1999)	% TOTAL INTER-RUPTIONS (1999)	CUSTOMER MINUTES OUT (1999)	% CUSTOMER MINUTES OUT (1999)
Other Alternative Retail Electric Supplier	0	0	0	0
Jurisdictional Entity / Contractor Personnel-Errors	113	1.4 %	500544	1.4 %
Customer	114	1.4 %	665295	1.8 %
Public	368	4.6 %	1967905	5.4 %
Weather Related	282	3.5 %	6912210	19.0 %
Animal Related	1921	24.1 %	2879646	7.9 %
Tree Related	595	7.5 %	4291193	11.8 %
Overhead Equipment Related	1985	24.9 %	7993458	22.0 %
Underground Equipment Related	217	2.7 %	1415516	3.9 %
Intentional	486	6.1 %	2756792	7.6 %
Transmission and Substation Related	57	0.7 %	3442237	9.5 %
Unknown	1174	14.7 %	2695345	7.4 %
Other	673	8.4 %	850528	2.3 %

[411.120 b) 3) G) ii)]

VI. Service Reliability Information – Operating Areas

Listed below is Ameren-CIPS' worst-performing distribution circuits when ranked by SAIFI, CAIDI, and CAIFI indices for the 6 Operating Areas:

OPERATING AREA	CIRCUIT	SAIFI	CAIDI	CAIFI
Northern Prairie	Y55505	5.99		
Northern Prairie	Y57001		282.00	
Northern Prairie	Y20522			3.49
Heritage	X09594	7.94		
Heritage	Y97001	6.10		
Heritage	Y04504		491.94	

Heritage	Z11506		431.36	
Heritage	X09594			7.76
Heritage	X29003			3.17
Wabash	X22001	6.48		
Wabash	X23505	5.51		
Wabash	X16511		1336.84	
Wabash	X02546		649.45	
Wabash	X22001			5.27
Wabash	X96543			4.72
Shawnee	T06504	7.02		
Shawnee	S21528	6.86		
Shawnee	S34527	6.12		
Shawnee	S01501		1893.31	
Shawnee	S01559		1758.32	
Shawnee	S55534		1668.46	
Shawnee	S34527			5.58
Shawnee	S21528			4.59
Shawnee	T06504			4.36
Eagle View	V03562	3.83		
Eagle View	V14579	3.63		
Eagle View	U07001		761.00	
Eagle View	V69532		587.68	
Eagle View	V03562			3.56
Eagle View	V14579			3.29
Four Rivers	V21548	4.45		
Four Rivers	V61563	4.40		
Four Rivers	V06501		1080.00	
Four Rivers	V92555		851.64	
Four Rivers	V21548			4.43
Four Rivers	V61563			4.36

[411.120 b) 3) I)]

VII. Operating & Maintenance History of Worst-Performing Circuits with Action Plans

[411.120 b) 3) J)]

Substation Y55, Circuit 505

Outage History

The circuit experienced a prolonged, total interruption on February 5, 1999, resulting from problems with customer-owned equipment. When the customer problem occurred, the overcurrent device protecting the service did not operate due to coordination problems with the substation breaker. As a result, the substation breaker operated instead of the protective device at the customer's location, causing a total interruption of the circuit. In addition, several minor interruptions occurred in 1999 due to animals contacting wires and equipment.

Actions Taken or Planned

The substation breaker was replaced in 1999 and now coordinates with the fuses protecting the service that caused the problems on February 5, 1999. In addition, the coordination of overcurrent protective devices for the remainder of the circuit has since been reevaluated and modified where necessary. No additional actions are planned at this time.

Approximate cost of actions: $2500

Substation Y57, Circuit 001

Outage History

The circuit only experienced one significant interruption in 1999. The cause of this interruption is unknown.

Actions Taken or Planned

Although the cause of the outage above is unknown, the distribution facilities in the section of town in which it occurred were already scheduled to be rebuilt in 2000. Once the rebuild project is complete, no additional problems should occur.

Approximate cost of actions: $60,000

Substation Y20, Circuit 522

Outage History

This circuit experienced six extended outages in January and February of 1999 that were the result of galloping conductors. This circuit extends radially in three different directions, covering in excess of 30 miles. Since it covers such a large geographical area, it is highly prone to galloping when icing conditions occur. There were two additional extended outages that were the result of animals contacting energized conductors and equipment. Several partial outages in one town were the result of trees contacting energized wires and a rural tap that is in deteriorated condition.

Actions Taken or Planned

The deteriorated rural tap that caused several partial outages in recent years will be rebuilt in 2000. Tree clearances will also be evaluated to determine if any trimming is needed in 2000. In addition, circuit studies will be performed to determine if the downstream overcurrent protective devices feeding the remote towns of coordinate properly with the substation breaker.

Approximate cost of actions: $25,000

Substation X09, Circuit 594

Outage History

This rural distribution line was subjected to a light accumulation of ice that resulted in conductor galloping and failure of the distribution crossarms. The circuit was restored to service after the replacement of arms, braces and a reduction in the wind. Lightning has also been the cause of interruptions on this circuit, resulting in the breaker locking out and additional damage to crossarms and braces.

Actions Taken or Planned

The affected section with broken arms had the standard 8-foot distribution arms replaced with 10-foot arms and heavy-duty braces to prevent the conductor contacts. The HD brace should provide additional strength for wind and icing conditions.

A project has also been completed that replaced lightning-damaged crossarms on this circuit with new 10-foot arms to improve conductor clearances and provide additional support. Line arresters have been installed at a rate of six / mile in an effort to eliminate the damage and outages on this circuit caused by lightning.

Approximate cost of actions: $5000

Substation Y97, Circuit 001

Outage History

The circuit was interrupted when load conditions were operating at peak load. Equipment operated to open and protect the loading on the 12kv to4kv station equipment. The delays in restoration occurred when it was necessary to restore power in steps to prevent overloading.

Actions Taken or Planned

Substation equipment was changed to provide additional load capability and circuit changes were made when the problems occurred. Subsequent load balancing and rearrangement of circuit connections to the main feeder have been made to prevent circuit or component overloading.

A project has been identified that will result in the conversion of the 4kv distribution circuit to 12kv and the retirement of the 12kv- 4kv substation transformer. An alternate feed for the 12 kV system is available from another source that should reduce restoration time for some of the interruptions, since no alternate feed capability existed for the 4kv system.

Approximate cost of actions: $90,000

Substation Y04, Circuit 504

Outage History

This rural distribution line was subjected to interruptions that occurred when wind-blown trees came into contact with primary conductors. In addition, a dead tree fell into the line from a customer's property that resulted in one of the longer interruptions on this feeder.

Actions Taken or Planned

This circuit is on a periodic-trimming schedule and was last trimmed in June 1996. This line is currently scheduled to be trimmed during the second quarter of 2000.

Approximate cost of actions: $7,000

Substation Z11, Circuit 506

Outage History

This rural distribution line was subjected to a variety of interruptions during 1999. The after-hours outages that occurred in this rural area resulted in several lengthy interruptions. There were three instances where squirrels created the interruption to single transformers. There was one instance when a line disconnect was destroyed by the squirrel's contact. Lightning on the line was the cause of single phase condition that created low voltage as well as outages to these customers. In most cases, the interruptions occurred after hours that increased the response to the trouble call.

Actions Taken or Planned

This rural line will have lightning arresters installed at a six/mile rate to reduce the effects of lightning strikes. The transformers that have had squirrel attacks have been equipped with an animal guard that creates a static charge to keep all varmints away from the energized equipment. Several minor maintenance projects have been done on this feeder for equipment that was found to be in need of repair during the annual distribution inspection. The line will be studied by engineering for proper protection and coordination of protection devices.

Approximate cost of actions: $5000

Substation X29, Circuit 003

Outage History

This urban distribution feeder has had four instances when a line protection fuse has operated during storm conditions. There are approximately 55 customers located on this portion of the circuit that have had interruptions during 1999. After each operation, the line has been patrolled and no abnormal conditions were reported. This area has been inspected during the 1999 annual inspection and no defects were reported.

Actions Taken or Planned

Each time the line fuse was replaced and the customers were placed back into service.

The installation of line arresters in the urban area will be reviewed as a possible aid to the lightning strikes that has affected these customers. A detailed review of the customers and the area around this line will be made to determine if a water tower, microwave tower or other tall structure is acting as a lightning rod and affecting our line.

Approximate cost of actions: $1000

Substation X22, Circuit 001

Outage History

A majority of the outages on this circuit were due to trees contacting the lines. In most cases the limbs were cleared at the time the circuits were restored.

Actions Taken or Planned

Trees in the east half of the town were trimmed in the spring of 1999 and the west half is scheduled for trimming in the 2nd quarter of 2000. This should reduce the number of tree related outages on this circuit.

Approximate cost of actions: $5000

Substation X23, Circuit 505

Outage History

A majority of the outages on this circuit were due to trees contacting the lines. In most cases the limbs were cleared at the time the circuits were restored.

Actions Taken or Planned

Trees in the east half of the town were trimmed in the spring of 1999 and the west half is scheduled for trimming in the 2nd quarter of 2000. This should reduce the number of tree related outages on this circuit.

Approximate cost of actions: $5000

Substation X16, Circuit 511

Outage History

Almost all the interruptions occurred during a severe thunderstorm with a tornado causing some damage. The outages were several and spread throughout the area. Restoration times were fairly normal except for the 5 customers affected by the tornado damage.

Actions Taken or Planned

The damaged electric facilities were repaired or replaced at the time. No further actions are planned.

Substation X02, Circuit 546

Outage History

The area was affected by a severe ice storm on January 1-2. The interruptions were widespread. Restoration times were more than normal due to the hazardous travel conditions and the tree limbs and facilities being covered with ice.

Actions Taken or Planned

The damaged electric facilities were repaired or replaced at the time. The normal tree trimming cycle was completed in 1999. No further actions are planned.

Substation X96, Circuit 543

Outage History

A majority of the outages on this circuit were due to trees contacting the lines.

Actions Taken or Planned

Tree trimming was done between July 1999 and September 1999 in identified problem areas identified on this circuit.

Approximate cost of actions: $5000

Substation T06, Circuit 504

Outage History

This 12KV circuit experienced two total outages during 1999, one as a result of the January 2, 1999 ice storm, and the other due to a vehicle accident. Fourteen device outages are the result of two other vehicle accidents, several small storms, a number of tree-related problems, ten transformer outages, and twelve additional single outages.

Actions Taken or Planned

Line clearance of this circuit was completed during 1999. A number of maintenance projects have been prepared and awaiting completion. We have hung several fault indicators on various taps of this circuit to determine the location of our unknown interruptions.

Approximate cost of actions: $15,000

Substation S21, Circuit 528

Outage History

This circuit experienced a series of related events. Tree trimmers accidentally dropped a large tree onto this circuit. We also experienced 3 large storm related interruptions, 7 animal outages, 2 bad ug transformers, 2 bad transformer cutouts, and 4 interruptions attributed to a bad ug substation exit.

Actions Taken or Planned

We have stressed the need to our tree trimming contractor to take additional precautions when dropping trees to prevent service interruptions & to enhance operator safety. All future transformer outages attributed to animals will be retrofitted with animal guards when being refused. The multiple outages on the substation exit was attributed to an improper sized splice being issued to the job. These oversized 500 mcm splices have now been discarded company wide by stores to prevent future problems.

Approximate cost of actions: $5,000

Substation S34, Circuit 527

Outage History

There were 21 recorded outages on this circuit last year. This circuit is in a rural area with many miles of line running through areas where trees cause problems. This area is also very near the Mississippi River and tends to get hit with an inordinate amount of lightning. There are relatively few customers on this circuit with most customers being served by a transformer that services no other customers. Therefore each outage tends to have a larger than normal effect on this particular index.

Of the 21 recorded outages, 11 were device or feeder outages (the remainder were single outages or transformer outages). All of the 11 outages affecting multiple transformers were attributed to overhead problems, trees, or unknown causes. Four of the remaining transformer outages were attributed to animals.

Actions Taken or Planned

The outages affecting multiple transformers were mainly caused by trees and lightning. Therefore some tree trimming has been done in this area to reduce these outages. To address the transformer outages, we are installing plastic animal guards and insulated riser wire anytime they are called to re-fuse a transformer and suspect an animal caused outage.

Approximate cost of actions: $3,000Substation S01, Circuit 501; Substation S01, Circuit 559; Substation S55, Circuit 534

Outage History

There was a major storm that caused severe damage in widespread areas covered by the Shawnee Region on 5/17/99. Because of the severe system damage over almost the entire region, it took over 3 days to restore electric service to all customers serviced from these specific circuits.

Actions Taken or Planned

All available crews were utilized to restore electric service as quickly as possible during this major storm. Since the circuit performed much better during the remainder of the year, no other actions are planned.

Substation V03, Circuit 562

Outage History

This circuit experienced eleven outages in 1999, two outages occurred as a result of tree contact during high wind conditions, two outages occurred during major storm conditions, one was caused by a public accident, two other outages were caused by animal contact, and the remaining four outages were various problems of unknown nature.

Actions Taken or Planned

In 1999, we performed tree trimming on this circuit. The feasibility of using wildlife guards to minimize the probability of animal caused outages will be explored for the equipment that experienced animal related outages in 1999. This line has been patrolled and no other problems have been found and no additional action is expected at this time.

Approximate cost of actions: $5,000

Substation V14, Circuit 579

Outage History

This circuit experienced multiple interruptions in 1999. The vast majority of the outage time was caused lightning-induced transformer outages, wind-induced tree contacts, while other outages were caused by dig-ins, animal contacts at transformer installations, equipment failures, or were of an unknown nature.

Actions Taken or Planned

A system inspection is being conducted to determine locations where facilities are in need of repair, in an effort to improve the outage history on this circuit. A project to address some of these problems has already been initiated.

Approximate cost of actions: $70,000

Substation U07, Circuit 1

Outage History

This circuit experienced one interruption in 1999. A severe wind and lightning storm on 8/12/99 caused tree contacts that resulted in the outage.

Actions Taken or Planned

No further action is planned.

Substation V69, Circuit 532

Outage History

This circuit experienced 5 outages in 1999. One was caused by a windstorm that broke 16 poles on this feeder and the other four were the result of blown transformer fuses from unknown causes.

Actions Taken or Planned

Repairs were made to the storm damaged section of this circuit. No further action is planned.

Substation V21, Circuit 548

Outage History

Of the 23 interruptions on this circuit in 1999, nearly all occurred during storms and likely were the result of wind, lightning, broken poles, or down conductor.

Actions Taken or Planned

An older section of this circuit will be rebuilt; this section is particularly vulnerable to bad weather and adverse conditions, as well as lightning arresters will be added in the rural areas of this circuit. A review of the fuse coordination for this entire circuit will also be performed.

Approximate cost of actions: $95,000

Substation V61, Circuit 563

Outage History

Of the 48 separate interruptions on this circuit in 1999, nearly all occurred during storms with tree contact.

Actions Taken or Planned

This circuit will be trimmed in 2000. Also, lightning arresters will be installed on the rural areas of this circuit.

Approximate cost of actions: $5,000

Substation V06, Circuit 501

Outage History

Only 1 interruption affecting this circuit, and it was caused by a severe thunderstorm in the area. The damaged facilities were replaced or repaired at that time.

Actions Taken or Planned

No additional work is planned.

Substation V92, Circuit 555

Outage History

The majority of outages were the result of a tornado and severe thunderstorms. Several also had tree problems as a contributing factor.

Actions Taken or Planned

This circuit will be trimmed in 2000.

Approximate cost of actions: $5,000

XIII. Company Contact

For further information regarding this report, contact:

David E. Starwalt
Dispatch Supervisor, Operations Support Department
Ameren-CIPS
711 South Ninth Street
Mattoon, Illinois 61938
Phone: (217) 234-0462 FAX: (217) 234-0465